

Serial No. 09/804,107
Amendment B

IN THE CLAIMS:

Please cancel claims 63-67, 69-74, 79-83, 85-91, 96-100, 102-107, 112-115, 117-122, 127-130, 132-137, 142-144 and 196-201.

Please consider the following set of pending claims 68, 75-78, 84, 92-95, 101, 108-111, 116, 123-126, 131, 138-141 and 145-195, of which claims 68, 75, 77, 84, 92, 94, 101, 108, 110, 116, 123, 125, 131, 138, 140, 145 have been amended, and claims 202-225 are new, as attached in clean form as well as in marked-up form showing changes in the amended claims relative to the previous version of the claims according to 37 C.F.R. §1.121(c)(3):

Clean Version of Pending Claims

68, 75-78, 84, 92-95, 101, 108-111, 116, 123-126, 131, 138-141, 145-195 and 202-225

D 1 ~~68~~ (Amended). Apparatus for delivering material into bone comprising
a cannula for establishing a subcutaneous path into bone and including at least one
radiopaque marker, and
a tamping instrument having a tamping terminus,
the tamping instrument being sized and configured for manipulation independent of the
cannula to enable insertion of the tamping instrument into the cannula, advancement of the tamping
terminus in the cannula to urge material residing in the cannula into bone, and withdrawal of the
tamping terminus from the cannula.

D 2 ~~75~~ (Amended). Apparatus for delivering material into bone comprising
a cannula for establishing a subcutaneous path into bone, and
a tamping instrument having a tamping terminus and including at least one marking to
visually gauge the advancement of the terminus relative to the distal end of the cannula,
the tamping instrument being sized and configured for manipulation independent of the
cannula to enable insertion of the tamping instrument into the cannula, advancement of the tamping
terminus in the cannula to urge material residing in the cannula into bone, and withdrawal of the
tamping terminus from the cannula.

~~76~~ 26 Apparatus according to claim ~~75~~ 26
wherein the at least one marking indicates when the distal end of the tamping instrument
is aligned with the distal end of the cannula instrument.

~~77~~ 26 (Amended). Apparatus according to claim ~~76~~ 26
wherein the tamping instrument includes a set point marking spaced from the terminus
at a distance generally equal to the length of the cannula.

~~78~~ 29 Apparatus according to claim ~~76~~ 29
wherein the tamping instrument includes at least one additional marking to visually
gauge advancement of the terminus relative to the distal end of the cannula.

D 3 ~~84~~ (Amended). Apparatus for delivering material into bone comprising
a cannula for establishing a subcutaneous path into bone, the cannula including at least
one radiopaque marker and being sized and configured to accept insertion and withdrawal of a first
instrument in the cannula, and
a tamping instrument separate from the first instrument having a tamping terminus,
the tamping instrument being sized and configured for manipulation independent of the
cannula to enable insertion of the tamping instrument into the cannula and advancement of the

~~tamping terminus in the cannula to urge material residing in the cannula into bone.~~

D4/ ~~92~~³¹ (Amended). Apparatus for delivering material into bone comprising
a cannula for establishing a subcutaneous path into bone, the cannula being sized and
configured to accept insertion and withdrawal of a first instrument in the cannula, and
a tamping instrument separate from the first instrument having a tamping terminus,
the tamping instrument including at least one marking to visually gauge the
advancement of the terminus relative to the distal end of the cannula and being sized and
configured for manipulation independent of the cannula to enable insertion of the tamping
instrument into the cannula and advancement of the tamping terminus in the cannula to urge
material residing in the cannula into bone.

~~93~~³² Apparatus according to claim ~~92~~³¹
wherein the at least one marking indicates when the distal end of the tamping instrument
is aligned with the distal end of the cannula instrument.

~~94~~³³ (Amended). Apparatus according to claim ~~92~~³¹
wherein the tamping instrument includes a set point marking spaced from the terminus
at a distance generally equal to the length of the cannula.

~~95~~³⁴ Apparatus according to claim ~~94~~³³
wherein the tamping instrument includes at least one additional marking to visually
gauge advancement of the terminus relative to the distal end of the cannula.

~~101~~³⁵ (Amended). Apparatus for delivering material into bone comprising
a cannula for establishing a subcutaneous path into bone and including at least one
radiopaque marker; and
a tamping instrument for advancement through the cannula comprising a body portion
and a handle portion,
the handle portion having a cross-sectional area greater than the cross-sectional area of
the body portion.

D5
D6 ~~108~~³⁶ (Amended). Apparatus for delivering material into bone comprising
a cannula for establishing a subcutaneous path into bone; and
a tamping instrument for advancement through the cannula including at least one
marking to visually gauge the advancement of the terminus relative to the distal end of the cannula
and comprising a body portion and a handle portion,
the handle portion having a cross-sectional area greater than the cross-sectional area of
the body portion.

~~109~~³⁷ Apparatus according to claim ~~108~~³⁶

wherein the at least one marking indicates when the distal end of the tamping instrument is aligned with the distal end of the cannula instrument.

~~110~~³⁸ (Amended). Apparatus according to claim ~~108~~³⁶

wherein the tamping instrument includes a set point marking spaced from the terminus at a distance generally equal to the length of the cannula.

~~111~~³⁹. Apparatus according to claim ~~110~~³⁸

wherein the tamping instrument includes at least one additional marking to visually gauge advancement of the terminus relative to the distal end of the cannula.

~~116~~⁴⁰ (Amended). Apparatus for delivering material into bone comprising

a cannula for establishing a subcutaneous path into bone and including at least one radiopaque marker; and

a tamping instrument for advancement through the cannula comprising a body portion and a handle portion, the body portion being sized and configured to substantially fill the cannula when the tamping instrument is fully inserted into the cannula.

~~123~~⁴¹ (Amended). Apparatus for delivering material into bone comprising

a cannula for establishing a subcutaneous path into bone; and

a tamping instrument for advancement through the cannula including at least one marking to visually gauge the advancement of the terminus relative to the distal end of the cannula, and comprising a body portion and a handle portion, the body portion being sized and configured to substantially fill the cannula when the tamping instrument is fully inserted into the cannula.

~~124~~⁴². Apparatus according to claim ~~123~~⁴¹

wherein the at least one marking indicates when the distal end of the tamping instrument is aligned with the distal end of the cannula instrument.

~~125~~⁴³ (Amended). Apparatus according to claim ~~123~~⁴¹

wherein the tamping instrument includes a set point marking spaced from the terminus at a distance generally equal to the length of the cannula.

~~126~~⁴⁴. Apparatus according to claim ~~125~~⁴³

wherein the tamping instrument includes at least one additional marking to visually gauge advancement of the terminus relative to the distal end of the cannula.

~~131~~⁴⁵ (Amended). Apparatus for delivering material into bone comprising

a cannula for establishing a subcutaneous path into bone and including at least one radiopaque marker; and

a tamping instrument for advancement through the cannula comprising a body portion and a handle portion, the body portion having a substantially constant diameter along its length.

138 (Amended). Apparatus for delivering material into bone comprising a cannula for establishing a subcutaneous path into bone; and a tamping instrument for advancement through the cannula including at least one marking to visually gauge the advancement of the terminus relative to the distal end of the cannula and comprising a body portion and a handle portion, the body portion having a substantially constant diameter along its length.

139. Apparatus according to claim 138 wherein the at least one marking indicates when the distal end of the tamping instrument is aligned with the distal end of the cannula instrument.

140 (Amended). Apparatus for delivering material into bone comprising a cannula for establishing a subcutaneous path into bone; and a tamping instrument for advancement through the cannula including a set point marking spaced from the terminus at a distance generally equal to the length of the cannula and comprising a body portion and a handle portion, the body portion having a substantially constant diameter along its length.

141. Apparatus according to claim 140 wherein the tamping instrument includes at least one additional marking to visually gauge advancement of the terminus relative to the distal end of the cannula.

145 (Amended). Apparatus for delivering material into bone comprising a cannula for establishing a subcutaneous path into bone, the cannula comprising a generally rigid material and including at least one radiopaque marker, a tamping instrument comprising a generally rigid material and having a tamping terminus,

the tamping instrument being sized and configured for manipulation independent of the cannula to enable insertion of the tamping instrument into the cannula, advancement of the tamping terminus in the cannula to urge material residing in the cannula into bone, and withdrawal of the tamping terminus from the cannula, and

a handle carried by the proximal end of the tamping instrument.

146. Apparatus according to claim 145 wherein the tamping instrument has a blunt distal end.

147. Apparatus according to claim 146 wherein the cannula is sized and configured to accept insertion and withdrawal of a first instrument in the cannula, and

wherein the tamping instrument is separate from the first instrument.

~~148~~⁵³. Apparatus according to claim ~~147~~⁵²

wherein the handle carried by the tamping instrument has a cross-sectional area greater than the cross-sectional area of the tamping terminus of the tamping instrument.

~~149~~⁵⁴. Apparatus according to claim ~~148~~⁵³

wherein the tamping instrument is sized and configured to substantially fill the cannula.

~~150~~⁵⁵. Apparatus according to claim ~~149~~⁵⁴

wherein the tamping instrument has a substantially constant diameter along its length.

~~151~~⁵⁶. Apparatus according to claim ~~145~~⁵⁰

wherein the cannula has a length, and

wherein the length of the tamping instrument exceeds the length of the cannula.

~~152~~⁵⁷. Apparatus according to claim ~~151~~⁵⁶

wherein the tamping instrument has a substantially blunt distal end.

~~153~~⁵⁸. Apparatus according to claim ~~152~~⁵⁷

wherein the cannula is sized and configured to accept insertion and withdrawal of a first instrument in the cannula, and

wherein the tamping instrument and the first instrument are different instruments.

~~154~~⁵⁹. Apparatus according to claim ~~153~~⁵⁸

wherein the handle carried by the tamping instrument has a cross-sectional area greater than the cross-sectional area of the tamping terminus of the tamping instrument.

~~155~~⁶⁰. Apparatus according to claim ~~154~~⁵⁹

wherein the tamping instrument is sized and configured to substantially fill the cannula.

~~156~~⁶¹. Apparatus according to claim ~~155~~⁶⁰

wherein the tamping instrument has a substantially constant diameter along its length.

~~157~~⁶². Apparatus according to claim ~~156~~⁶¹

wherein, when the tamping instrument fully occupies the cannula, the handle carried by the tamping instrument is adjacent the proximal end of the cannula.

~~158~~⁶³. Apparatus according to claim ~~157~~⁶²

wherein the cannula has a blunt distal end.

~~159~~⁶⁴. Apparatus according to claim ~~158~~⁶³

wherein a removable handle is carried by the proximal end of the cannula.

~~160~~⁶⁵. Apparatus according to claim ~~159~~⁶⁴

wherein the tamping instrument has a generally blunt distal end.

~~66~~ 161. Apparatus according to claim ~~160~~ ~~65~~

wherein the cannula is sized and configured to accept insertion and withdrawal of a first instrument in the cannula, and

wherein the tamping instrument is separate from the first instrument.

~~67~~ 162. Apparatus according to claim ~~161~~ ~~66~~

wherein the handle carried by the tamping instrument has a cross-sectional area greater than the cross-sectional area of the tamping terminus of the tamping instrument.

~~68~~ 163. Apparatus according to claim ~~162~~ ~~67~~

wherein the tamping instrument is sized and configured to substantially fill the cannula.

~~69~~ 164. Apparatus according to claim ~~163~~ ~~68~~

wherein the tamping instrument has a substantially constant diameter along its length.

~~70~~ 165. Apparatus according to claim ~~145~~ ~~50~~

wherein, when the tamping instrument fully occupies substantially the entire cannula, the handle carried by the tamping instrument is adjacent the proximal end of the cannula.

~~71~~ 166. Apparatus according to claim ~~165~~ ~~70~~

wherein the tamping instrument has a blunt distal end.

~~72~~ 167. Apparatus according to claim ~~166~~ ~~71~~

wherein the cannula is sized and configured to accept insertion and withdrawal of a first instrument in the cannula, and

wherein the tamping instrument is separate from the first instrument.

~~73~~ 168. Apparatus according to claim ~~167~~ ~~72~~

wherein the handle carried by the tamping instrument has a cross-sectional area greater than the cross-sectional area of the tamping terminus of the tamping instrument.

~~74~~ 169. Apparatus according to claim ~~168~~ ~~73~~

wherein the tamping instrument is sized and configured to substantially fill the cannula.

~~75~~ 170. Apparatus according to claim ~~169~~ ~~74~~

wherein the tamping instrument has a substantially constant diameter along its length.

~~76~~ 171. Apparatus according to claim ~~169~~ ~~70~~

wherein the cannula has a blunt distal end.

~~77~~ 172. Apparatus according to claim ~~171~~ ~~76~~

wherein a removable handle is carried by the proximal end of the cannula.

~~78~~ 173. Apparatus according to claim ~~172~~ ~~77~~

wherein the tamping instrument has a blunt distal end.

~~79~~ 174. Apparatus according to claim ~~173~~ ~~78~~

wherein the cannula is sized and configured to accept insertion and withdrawal of a first instrument in the cannula, and

wherein the tamping instrument is separate from the first instrument.

~~175~~⁸⁰. Apparatus according to claim ~~174~~⁷⁹

wherein the handle carried by the tamping instrument has a cross-sectional area greater than the cross-sectional area of the tamping terminus of the tamping instrument.

~~176~~⁸¹. Apparatus according to claim ~~175~~⁸⁰

wherein the tamping instrument is sized and configured to substantially fill the cannula.

~~177~~⁸². Apparatus according to claim ~~176~~⁸¹

wherein the tamping instrument has a substantially constant diameter along its length.

~~178~~⁸³. Apparatus according to claim ~~177~~⁸²

wherein the cannula has a blunt distal end.

~~179~~⁸⁴. Apparatus according to claim ~~178~~⁸³

wherein the tamping instrument has a blunt distal end.

~~180~~⁸⁵. Apparatus according to claim ~~179~~⁸⁴

wherein the cannula is sized and configured to accept insertion and withdrawal of a first instrument in the cannula, and

wherein the tamping instrument is separate from the first instrument.

~~181~~⁸⁶. Apparatus according to claim ~~180~~⁸⁵

wherein the handle carried by the tamping instrument has a cross-sectional area greater than the cross-sectional area of the tamping terminus of the tamping instrument.

~~182~~⁸⁷. Apparatus according to claim ~~181~~⁸⁶

wherein the tamping instrument is sized and configured to substantially fill the cannula.

~~183~~⁸⁸. Apparatus according to claim ~~182~~⁸⁷

wherein the tamping instrument has a substantially constant diameter along substantially its entire length.

~~184~~⁸⁹. Apparatus according to claim ~~183~~⁸⁸

wherein a removable handle is carried by the proximal end of the cannula.

~~185~~⁹⁰. Apparatus according to claim ~~184~~⁸⁹

wherein the tamping instrument has a blunt distal end.

~~186~~⁹¹. Apparatus according to claim ~~185~~⁹⁰

wherein the cannula is sized and configured to accept insertion and withdrawal of a first instrument in the cannula, and

wherein the tamping instrument is separate from the first instrument.

~~187~~⁹². Apparatus according to claim ~~186~~⁹¹

wherein the handle carried by the tamping instrument has a cross-sectional area greater than the cross-sectional area of the tamping terminus of the tamping instrument.

~~188~~⁹³. Apparatus according to claim ~~187~~⁹²

wherein the tamping instrument is sized and configured to substantially fill the cannula.

~~189~~⁹⁴. Apparatus according to claim ~~188~~⁹³

wherein the tamping instrument has a substantially constant diameter along its length.

~~190~~⁹⁵. Apparatus according to claim ~~189~~⁹⁴

wherein a removable handle is carried by the proximal end of the cannula.

~~191~~⁹⁶. Apparatus according to claim ~~190~~⁹⁵

wherein the tamping instrument has a blunt distal end.

~~192~~⁹⁷. Apparatus according to claim ~~191~~⁹⁶

wherein the cannula is sized and configured to accept insertion and withdrawal of a first instrument in the cannula, and

wherein the tamping instrument is separate from the first instrument.

~~193~~⁹⁸. Apparatus according to claim ~~192~~⁹⁷

wherein the handle carried by the tamping instrument has a cross-sectional area greater than the cross-sectional area of the tamping terminus of the tamping instrument.

~~194~~⁹⁹. Apparatus according to claim ~~193~~⁹⁸

wherein the tamping instrument is sized and configured to substantially fill the cannula.

~~195~~¹⁰⁰. Apparatus according to claim ~~194~~⁹⁹

wherein the tamping instrument has a substantially constant diameter along its length.

~~202~~² (New). Apparatus according to claim ~~68~~¹

wherein the cannula has a length, and

wherein the length of the tamping instrument exceeds the length of the cannula.

~~203~~³ (New). Apparatus according to claim ~~68~~¹

wherein a removable handle is carried by the proximal end of the cannula.

~~204~~⁴ (New). Apparatus according to claim ~~68~~¹

wherein a handle is carried by the proximal end of the tamping instrument.

~~205~~⁵ (New). Apparatus according to claim ~~204~~⁴

wherein, when the tamping instrument is fully inserted into the cannula, the handle is adjacent the proximal end of the cannula.

~~206~~⁶ (New). Apparatus according to claim ~~68~~¹

wherein the cannula comprises a generally rigid material.

~~207~~⁷ (New). Apparatus according to claim ~~68~~¹

wherein the tamping instrument comprises a generally rigid material.

~~208~~⁸ (New). Apparatus according to claim ~~68~~¹

wherein the tamping instrument has a blunt distal end.

~~209~~⁹ (New). Apparatus according to claim ~~68~~¹

wherein the cannula has a blunt distal end.

~~210~~¹⁰ (New). Apparatus according to claim ~~68~~¹

wherein the tamping instrument and the cannula each have a blunt distal end.

~~211~~¹¹ (New). Apparatus according to claim ~~68~~¹

further comprising a delivery device to convey material into the cannula.

~~212~~¹² (New). Apparatus according to claim ~~68~~¹

wherein the tamping instrument includes at least one marking to visually gauge the advancement of the terminus relative to the distal end of the cannula.

~~213~~¹³ (New). Apparatus according to claim ~~212~~¹²

wherein the at least one marking indicates when the distal end of the tamping instrument is aligned with the distal end of the cannula instrument.

~~214~~¹⁴ (New). Apparatus according to claim ~~68~~¹

wherein the tamping instrument includes a set point marking spaced from the terminus at a distance generally equal to the length of the cannula.

~~215~~¹⁵ (New). Apparatus according to claim ~~213~~¹³

wherein the tamping instrument includes at least one additional marking to visually gauge advancement of the terminus relative to the distal end of the cannula.

~~216~~¹⁶ (New). Apparatus according to claim ~~68~~¹

wherein the tamping instrument includes at least one radiopaque marker.

~~217~~¹⁷ (New). Apparatus according to claim ~~68~~¹

wherein the cannula is plastic.

~~218~~¹⁸ (New). Apparatus according to claim ~~217~~¹⁷

wherein the tamping instrument is plastic.

~~219~~¹⁹ (New). Apparatus according to claim ~~68~~¹

wherein the tamping instrument has a substantially constant diameter along its length.

~~220~~²⁰ (New). Apparatus according to claim ~~68~~¹

wherein the material is bone cement.

~~21~~ 221 (New). Apparatus according to claim ~~68~~ 69

wherein the material comprises autograft material.

~~22~~ 222 (New). Apparatus according to claim ~~68~~ 69

wherein the material comprises allograft material.

~~23~~ 223 (New). Apparatus according to claim ~~68~~ 69

wherein the material comprises calcium carbonate.

~~24~~ 224 (New). Apparatus according to claim ~~68~~ 69

wherein the material comprises demineralized bone matrix material.

~~25~~ 225 (New). Apparatus according to claim ~~68~~ 69

wherein the material comprises calcium phosphate.
